IN THE CLAIMS

1.   (canceled)

2.   (currently amended) ~~The~~ A signal processing apparatus ~~as set forth in claim 1, further~~ comprising:

analog filter means for performing band limitation of a reproduction signal having non-linear distortion and for performing analog equalization thereof;

first adaptive equalizing filter means for equalizing a linear signal of a filter output of the analog filter means;

second adaptive equalizing filter means connected in parallel with the first adaptive equalizing means for correcting non-linear distortion in the filter output of the analog filter means;

phase interpolation means for performing interpolation of phase based on a filter output of the first adaptive equalizing filter means and a filter output of the second adaptive equalizing filter means; and

phase locked loop means for synchronizing a phase of the phase interpolation means based on an interpolated output fed back from the phase interpolation means.

3.   (previously presented)   The   signal   processing apparatus as set forth in claim 2, wherein the second adaptive filter comprises a Volterra filter.

4.   (previously presented)   The   signal   processing apparatus as set forth in claim 2, further comprising,

Viterbi detecting means for detecting an error rate of the interpolated output fed back from the phase interpolation means to generate a feedback signal fed to the first adaptive

equalizing filter means and the second adaptive equalizing filter means.

5.   (canceled)

6.   (currently amended)   ~~The~~ A signal processing method ~~as set forth in claim 5, further~~ comprising:

an analog filter step for performing band limitation of a reproduction signal having non-linear distortion, and for performing analog equalization thereof;

a first adaptive equalizing filter step for equalizing a linear signal of a filter output of the analog filter step;

a second adaptive equalizing filter step executed in parallel to the first adaptive equalizing filter step for correcting non-linear distortion in the filter output of the analog filter step;

a phase interpolation step for performing interpolation of phase based on a filter output of the first adaptive equalizing filter step and a filter output of the second adaptive equalizing filter step; and

a phase locked loop step for synchronizing a phase of the phase interpolation step based on an interpolated output fed back from the phase interpolation step.

7.   (previously presented)   The signal processing method as set forth in claim 6,

wherein the second adaptive equalizing filter step uses a Volterra filter.

8.   (previously presented)   The signal processing method as set forth in claim 6, further comprising:

a Viterbi detection step for detecting an error rate of the interpolated output obtained at the phase interpolation step to

deliver a feedback signal to the first adaptive equalizing filter step and the second adaptive equalizing filter step.